The Tiger HIToolbox

Session 105

These are confidential sessions—please refrain from filming or taking pictures.

Application Technologies

The Tiger HIToolbox

What's new?

Eric Schlegel and Bryan Prusha
Cyborg and Archivist

http://developer.apple.com/wwdc2005/

We’ve Been Busy…

HIToolbox deliverables 2005

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Mac OS X 10.4 Tiger
April 29, 2005

What You'll Learn

- Review from 2004
- What's new
- HIArchive
- Compatibility tips
- Other changes in Tiger
- Q&A

What Is HIToolbox?

- HIToolbox is a UI toolkit, not an app framework
- Typical app clients
  - Cross-platform development

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- Typical app clients
  - Cross-platform development
  - Proprietary or third-party framework
  - Classic Mac OS compatibility
  - Codebase incompatible with Objective C
  - You just like Carbon!

Themes for Tiger

- Continue transition to compositing mode

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- Resolution independence

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- Improve Carbon/Cocoa integration
- Solve common developer problems

Review From Last Year

- Resolution independence
- Expanded HIView APIs
- HIView tracking areas
- HIShape support
- Text change notifications

Appearance Manager

- CoreGraphics drawing
  - HIThemeSetStroke/Fill/TextFillColor
  - HIThemeBrushCreateCGColor
- New controls
  - Panther-style tab-drawing support
    - HIThemeDrawSegment
- HIThemeDrawTextBox works outside of 16-bit coordinate range

Carbon Event Manager

- kEventWindowGetClickModality
  - Customize behavior of clicks on windows behind modal dialog
- Drawer focus hotkey support
- Menu command event routing through parent menus

HIView Manager

- Coordinate conversion APIs: HIPointConvert and more
- Drawing outside of 16-bit coordinate space
- Additional support for CGImages
- HICreateTransformedCGImage
- HIViewCopy/SetText
- HITextView support for more ControlData tags
- kEventClockDateOrTimeChange

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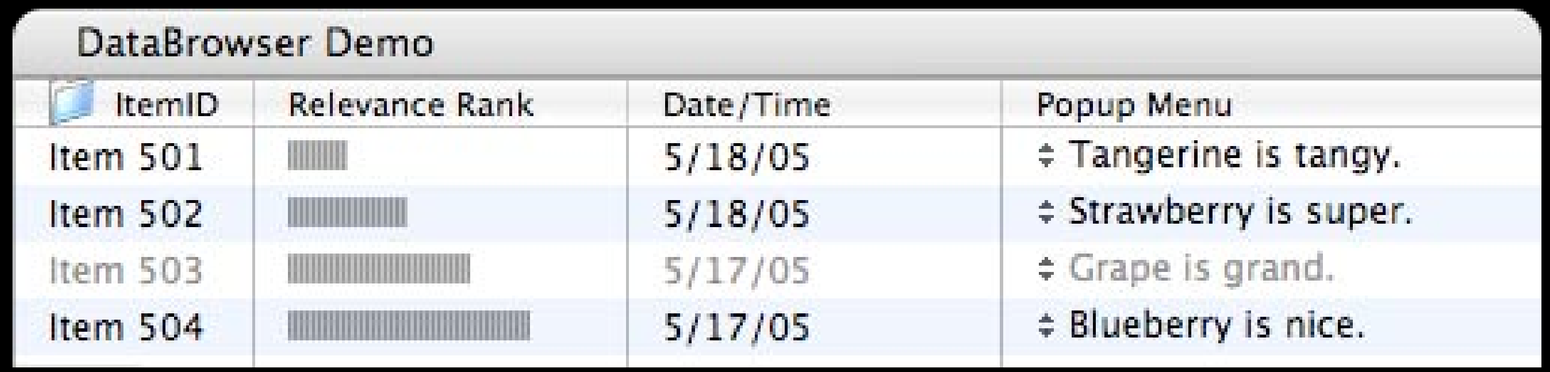
Data Browser

- DataBrowserGet/ChangeAttributes
  - Alternating row colors
  - Column dividers
- Buttonless popup menus
- DataBrowserGet/SetMetric



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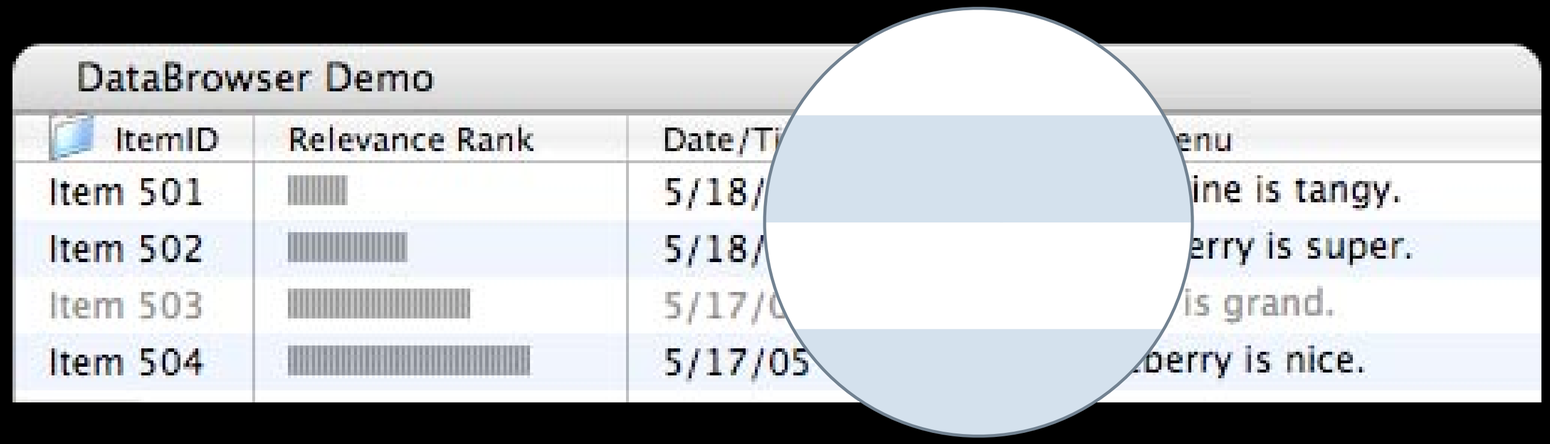

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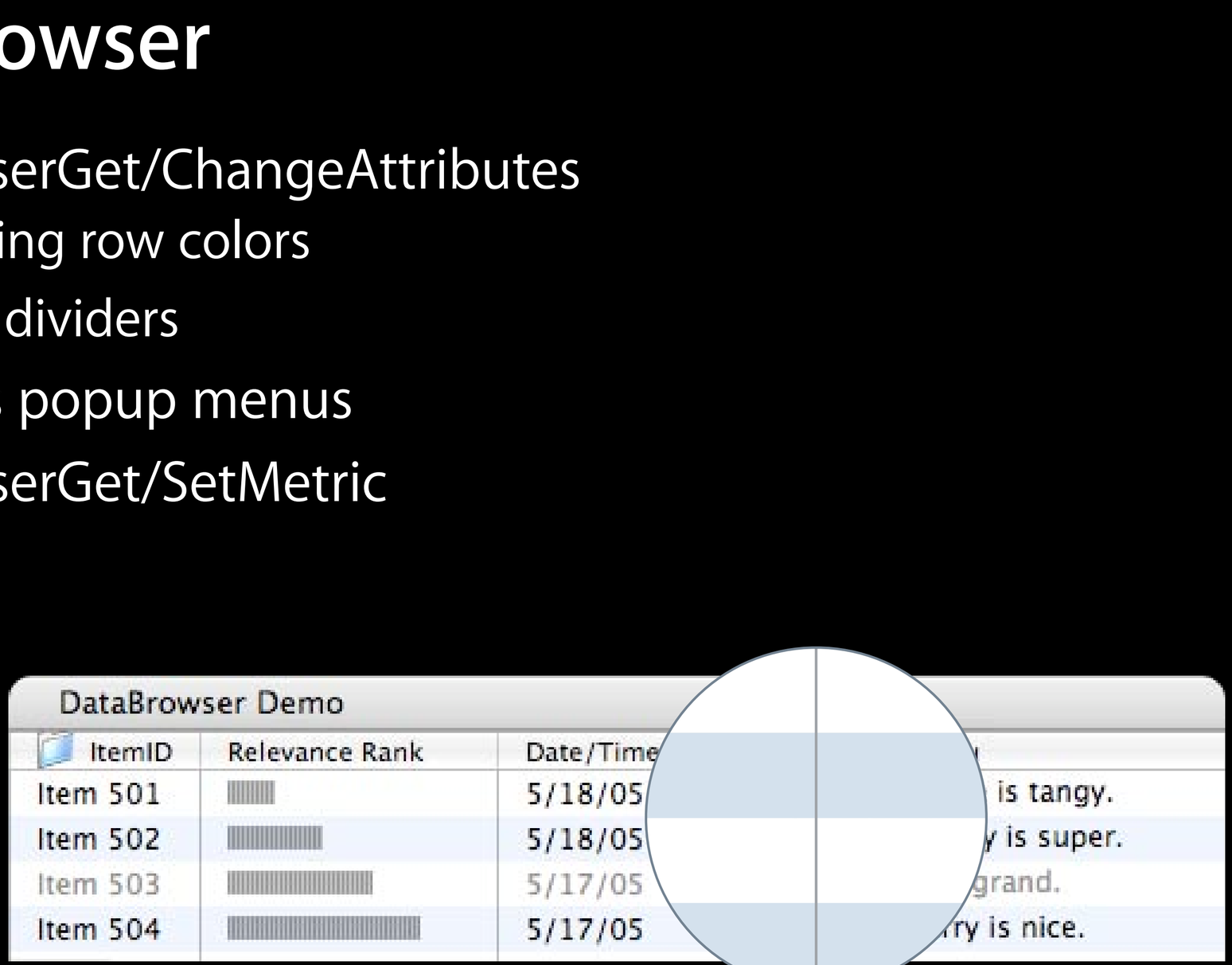

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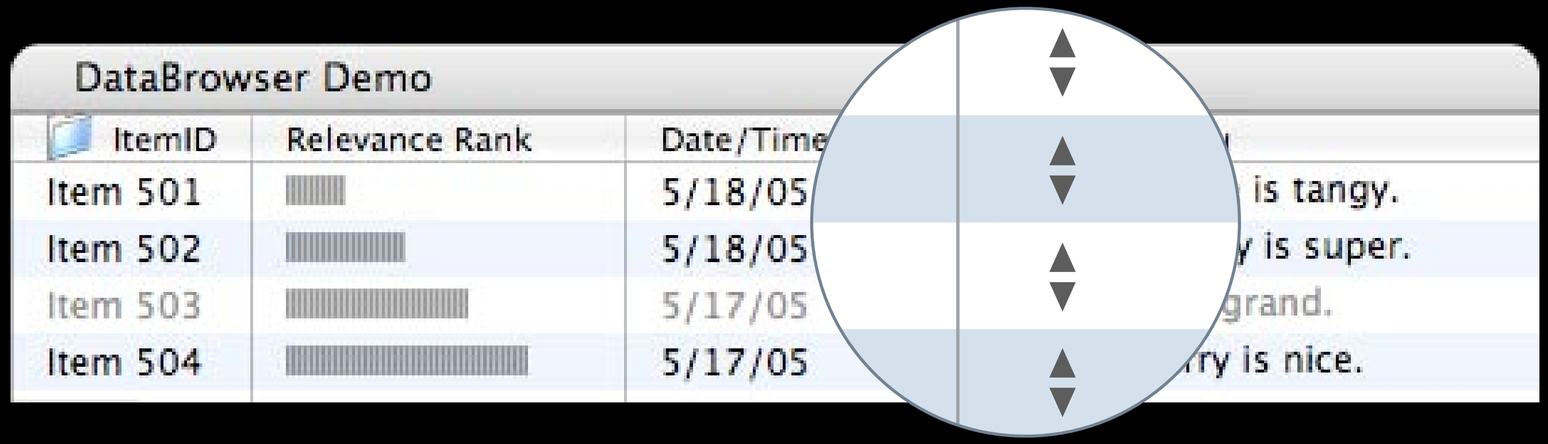
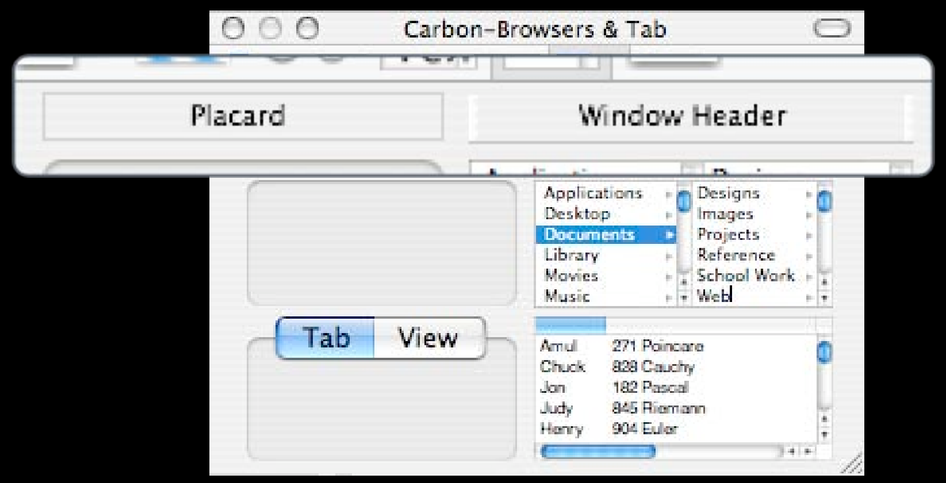
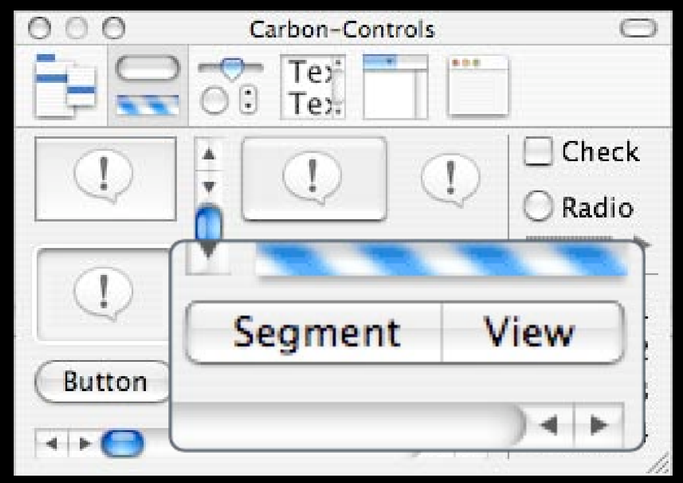


IB Carbon Support

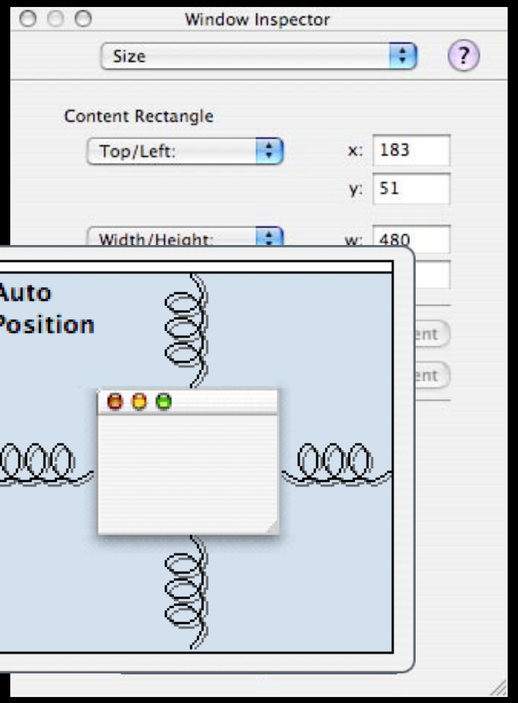
- Placard, WindowHeader, and Segmented views
- Control text foreground colors and justification
- Window attributes
- Window resizing limits

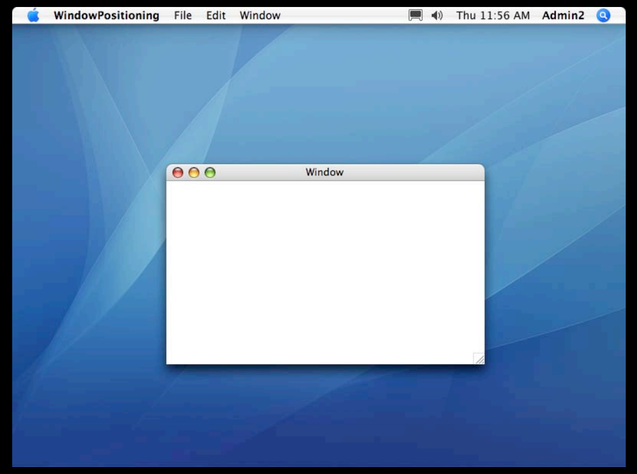


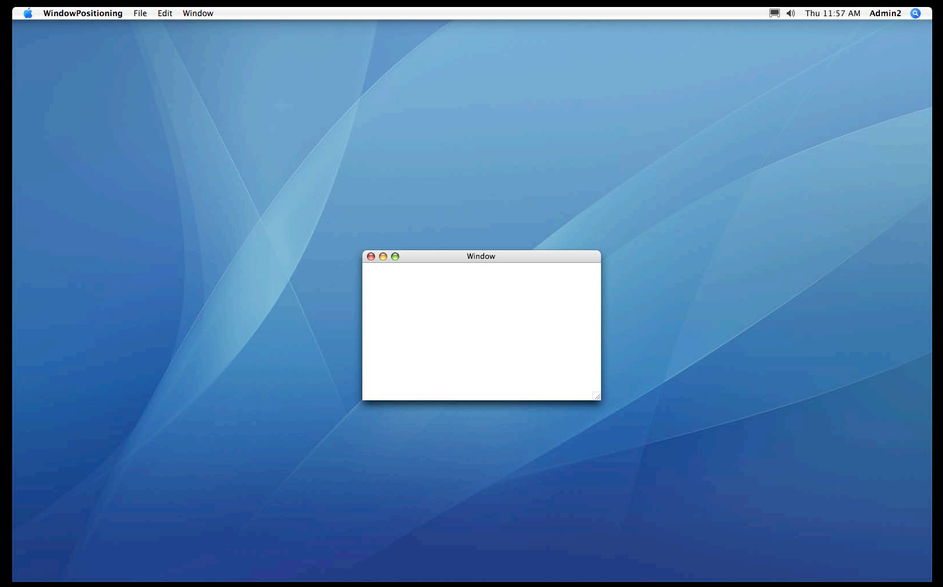


IB Carbon Support

Automatic window positioning based on display size







Menu Manager

- Menubar type-selection
- Popup menu selection is pre-hilighted

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User types “arr”...

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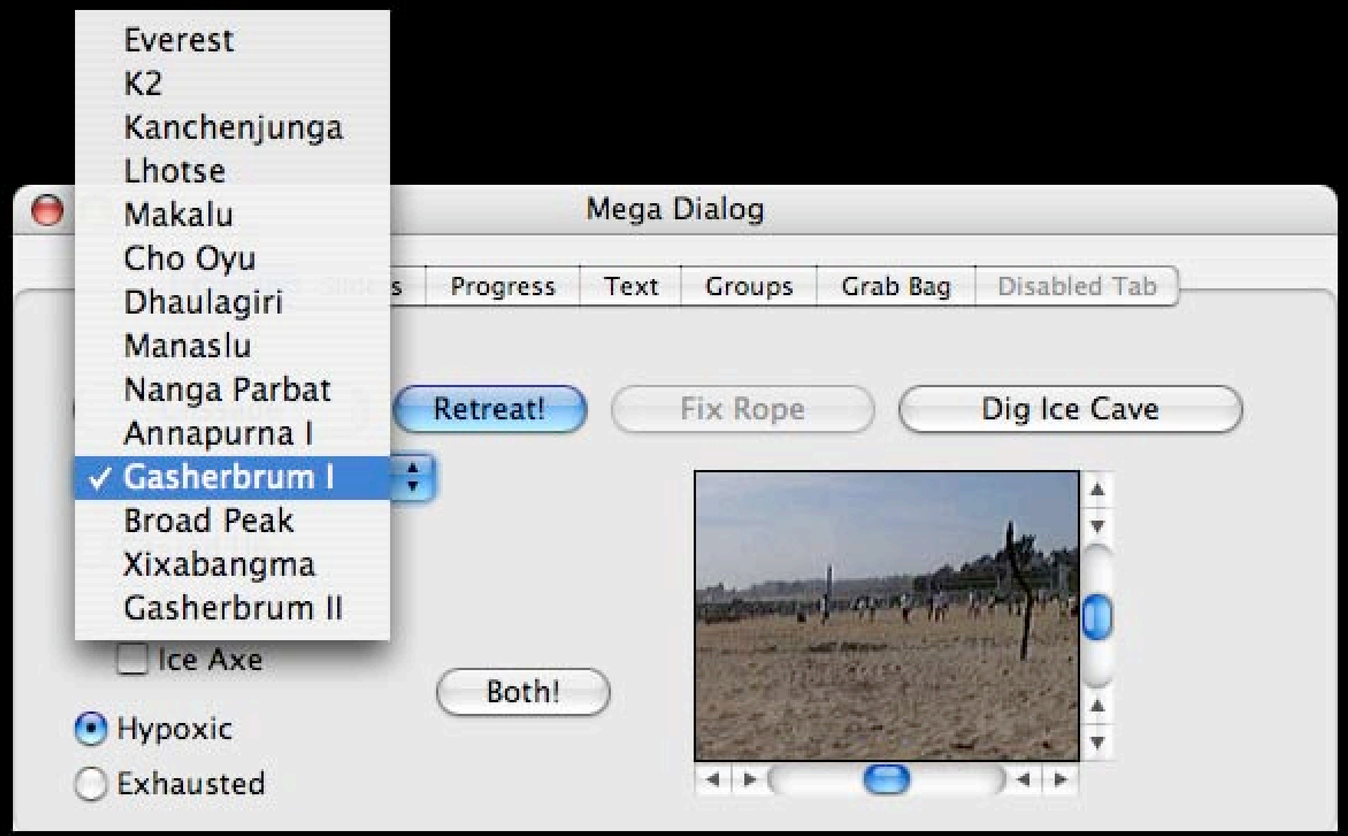
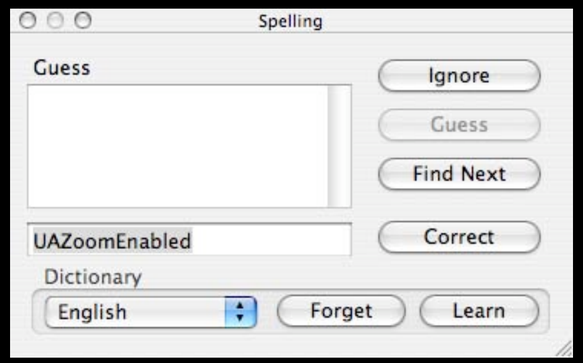
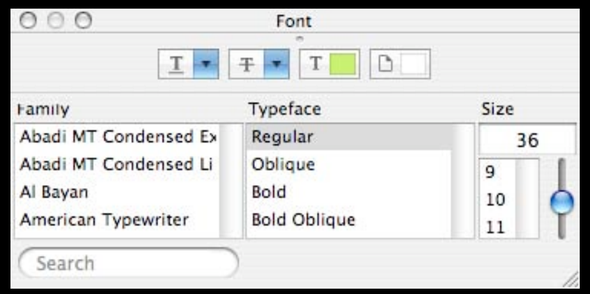


MLTE

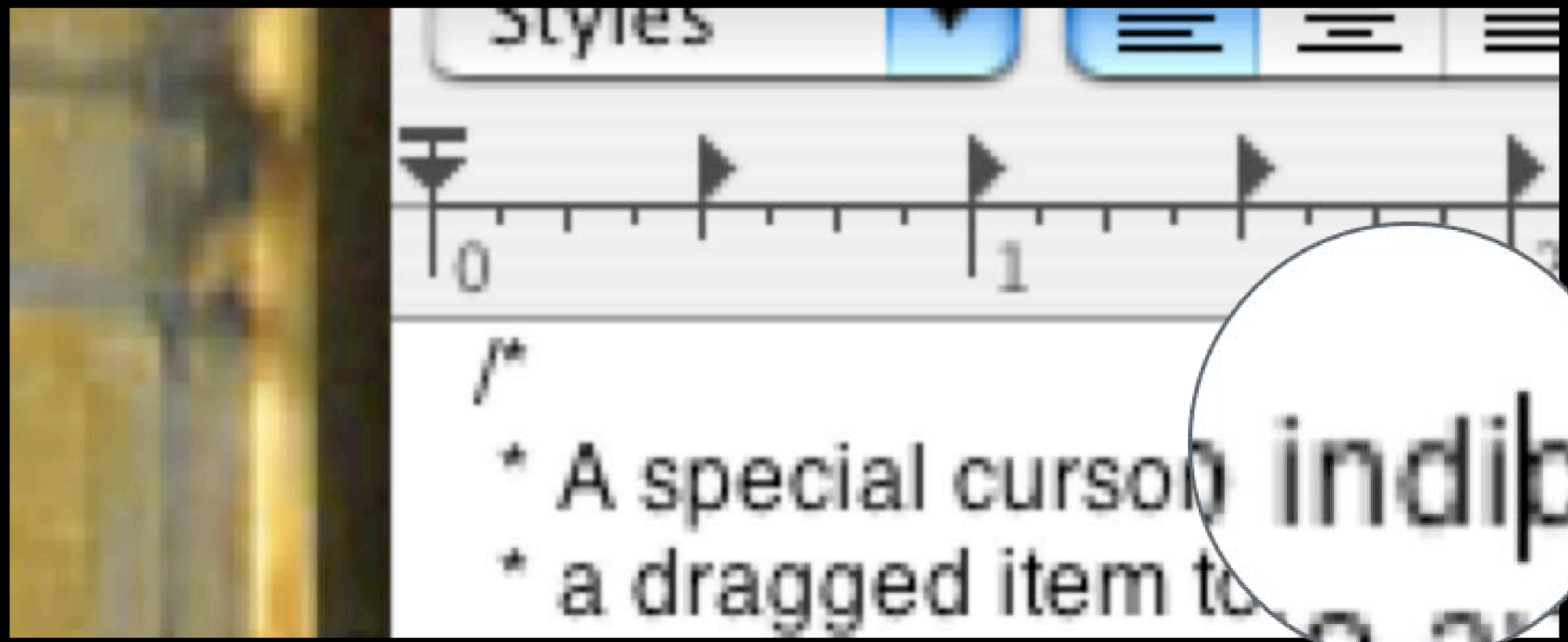
- Spell-checking
- Font and typography panels
- Scrolling behavior
- Improved undo group support
- Read from and write to CFURL





Universal Access

New APIs for managing focus during zoom



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Universal Access

- UAZoomEnabled
- UAZoomChangeFocus
- Typical uses
  - Word processor
  - Spreadsheet
  - Graphical object editor

Carbon/Cocoa Integration

- Unified window levels
- kHICommandSelectWindow always sent
- Automatic release of focus
- Focus-sensitive control drawing
- Autorelease pools

Cocoa Improvements

- Improved floating window behavior
  - Don’t remove activation from document windows
  - Don’t appear in the Windows menu
  - Hide when the app is hidden
- Improved focus behavior
  - User focus window updated when key window changes
  - Document windows swap key window status properly
- kEventClassApplication events now dispatched in Cocoa apps

Objective C Runtime

- HIToolbox now loads Foundation and Objective C runtime
- All HIObjects are NSObjects

DON'T
PANIC

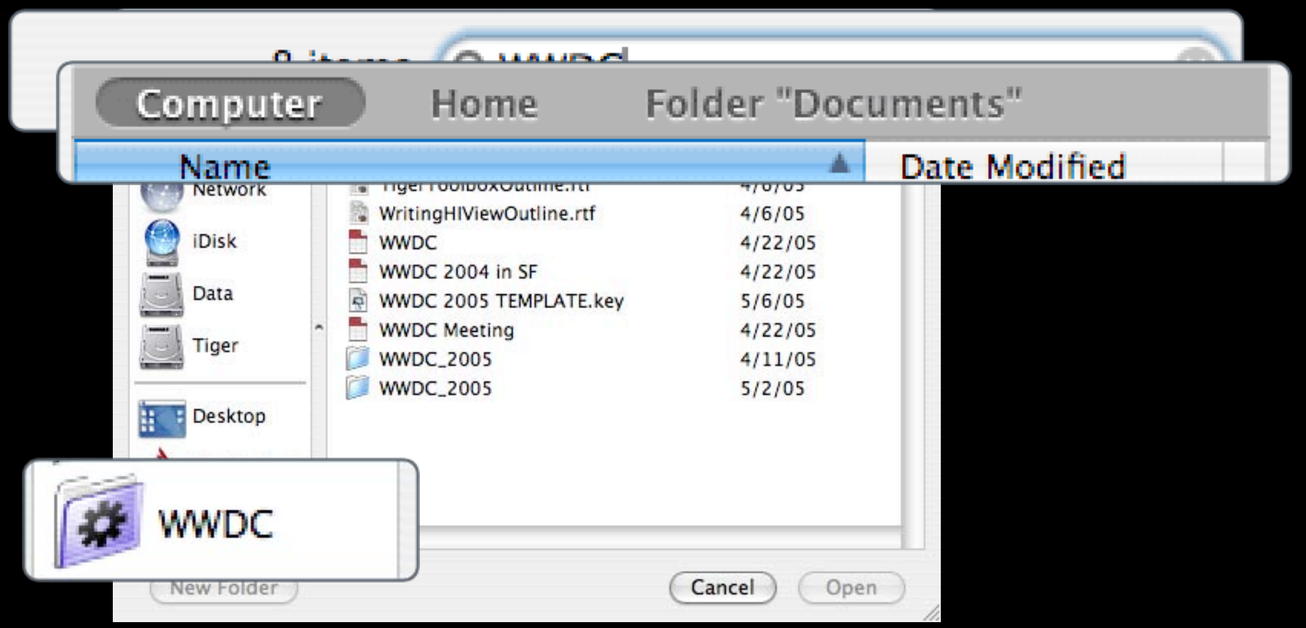
Navigation Services and HIArchive

Bryan Prusha

http://developer.apple.com/wwdc2005/

Navigation Services Improvements

- Spotlight support
- NavSetFilterTypeIdentifiers
  - UTI conformance for OSTypes and extensions
  - UTI display name used in Enable popup
- Enable popup updates in file browser



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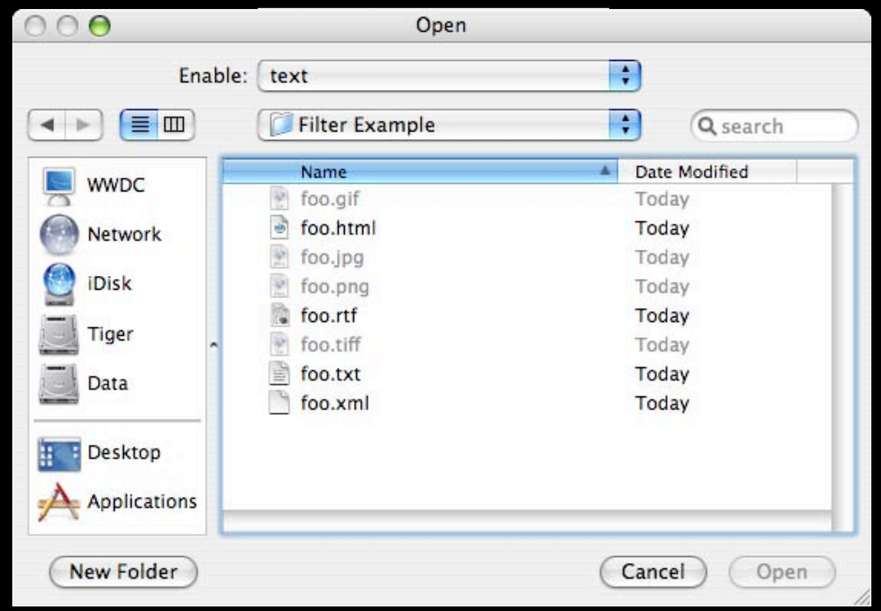
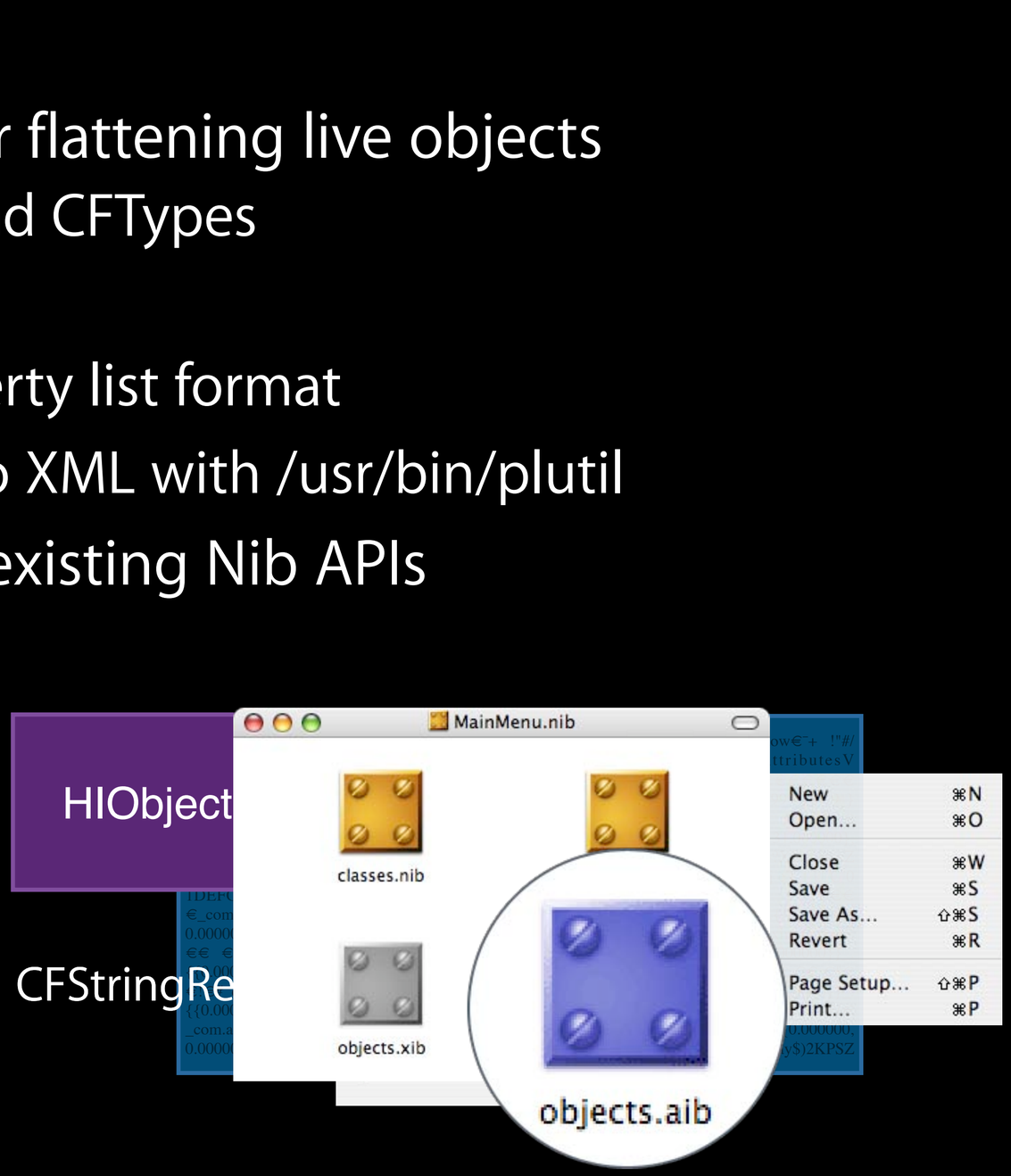


HIArchive

- Mechanism for flattening live objects
  - HIObjects and CFTypes
- Performance
  - Binary property list format
  - Converted to XML with /usr/bin/plutil
- Supported in existing Nib APIs



Using HIArchive

- Encoding
  - HIArchiveCreateForEncoding
  - HIArchiveEncodeCFType
  - HIArchiveCopyEncodedData
- Decoding
  - HIArchiveCreateForDecoding
  - HIArchiveCopyDecodedCFType

Archiving HIObjects

- HIObject archiving protocol
  - kEventHIObjectEncode
  - kEventHIObjectInitialize
    - kEventParamHIArchive
    - Call next event handler
    - HIObjectSetArchivingIgnored
    - See session 116 “Building a Custom HIView”
- Customization
  - HIObjectSetCustomArchiveData
    - Initialization parameters

HIBuilder Demo

http://developer.apple.com/wwdc2005/

Compatibility and Other Changes

Eric Schlegel

http://developer.apple.com/wwdc2005/

Compatibility Tips

- AddEventTypesToHandler
  - See release notes for details
- Menubar window
  - Use ActiveNonFloatingWindow or FrontNonFloatingWindow
- Window level changes
- kHICommandSelectWindow
- HIViewRender
  - Root view only!

Other Changes in Mac OS X Tiger

- File copy engine
  - FSCopy/MoveObjectSync, or create FSOperation, then async
- QuickDraw deprecation
- HIMovieView

HIMovieView

- Preferred way to put QuickTime movies in Carbon windows
- Full-featured HIView
  - Works in nib files
  - Works in composited windows
- Uses Visual Contexts
  - Live resizing
  - Leverage the GPU
- On Tiger, use instead of Carbon MovieControl

Coalesced Updates

- Previously known as deferred updates
- Pre-Tiger: flush request immediately starts a flush
- With CU: flush requests are queued until next VBL
- Improves performance, eliminates tearing

Coalesced Updates

- Reduces performance if you flush too often
- Only enabled for Tiger-linked apps
- Recommendations
  - Don’t flush explicitly
  - If you must flush, throttle your flush frequency
  - Don’t draw too often
  - Use QuartzDebug to explore effects on your app

Summary

- HIToolbox goals
  - Address developer requests
  - Support new technologies
  - Make it easy to write a great Mac OS X app
- What we want from you
  - Write custom HIViews
  - Use compositing mode and CoreGraphics
  - Make your app accessible
  - Tell us what you need

Who to Contact

HIToolbox Feedback
hitoolbox-feedback@group.apple.com

More Information

http://developer.apple.com/wwdc2005/

Documentation, Sample Code, and Other Resources

http://developer.apple.com/wwdc2005/

Roadmap

VoiceOver and Carbon Applications	Session 108 Tuesday 5:00PM
HITextView Unleashed on Tiger	Session 111 Wednesday 9:00AM
Building a Custom HIView	Session 116 Wednesday 10:30AM
Carbon/HIToolbox Feedback Forum	Session 131 Thursday 10:30AM
Create a Custom HIView Lab	App Tech Lab Wed, Thur, Fri

Q&A

http://developer.apple.com/wwdc2005/

WWDC2005

Worldwide Developers Conference